

parallel-connected sets of diodes, each set comprising a plurality of diodes connected in series.

Remarks

By the above amendment, independent claims 1, 18, and 24 are amended as discussed further below, previous claims 2-13 and 19-21 have been cancelled, and new claims 25-30 are added. After entry of this amendment, the application thus contains claims 1, 14-18, and 22-30.

In the Action, claims 1-2, 14-18, and 22-24 were rejected as being anticipated by or unpatentable over Calviello et al. US patent 5,445,985 (hereinafter Calviello). The independent claims 1, 18, and 24 are amended herein in order to distinguish the present invention clearly and patentably from Calviello.

More particularly, the action refers to Figs. 5 and 6 of Calviello as showing a high frequency signal limiter having two transmission line sections, each section comprising a series inductance with anti-parallel Schottky diodes at its output, with a shunt capacitance constituted by the diode capacitance, one diode being constituted by a parasitic diode 330 of a following circuit.

In Fig. 5 of Calviello, there is one diode for each polarity in each section. As now amended, claim 1 recites that "at least two of the transmission line sections have different numbers ... of diodes connected in series with one another". Claims 18 and 24 as now amended are also limited to different numbers of series-connected diodes in different sections. This is not shown by Calviello Fig. 5.

Calviello also shows in Fig. 11 a circuit comprising series anti-parallel diodes, for example 16, 36 and 18, 38, which

are coupled via a capacitor 72 at the output of a first section of the limiter, and a single diode 70 coupled via a capacitor 76 to the node 78. Calviello emphasizes the single diode providing an odd total number of diodes.

With respect to Fig. 11 Calviello states: "Schottky diode 70 and resonating capacitor 76 are connected in series between the ground reference at 32 and conductor 24 at connection node 78 intermediate inductor 68 and conductor end 28. Resonating capacitor 76 tunes out the parasitic inductance of Schottky diode 70 to reduce the reactive portion of the diode impedance." With respect to the related Fig. 35, Calviello states: "Schottky diode 70 and junction 210 are in parallel and in reverse polarity relative to each other, as shown at 210a, to form an anti-parallel array 212 of diodes 70 and 210 at 210a."

However, this description is not accurate. As illustrated, the capacitor 76 is in series with only the diode 70, and the diode 210 is necessarily in parallel to this series combination. Such an arrangement does not act as a signal voltage limiter, because the capacitor 76 would charge via the diode 70 to the peak signal voltage and has no discharge path, so that the diode 70 would not subsequently conduct. Calviello does not provide any further description to clarify this.

Accordingly, although Calviello Figs. 11 and 35 show a first limiter section having series-connected oppositely-poled diodes such as 16, 18, 36, 38 as discussed above (in which the capacitor 74 has a discharge path via the diodes because they are connected in parallel), the second section does not have a signal limiting function and does not have two oppositely poled diodes connected in parallel to provide such function.

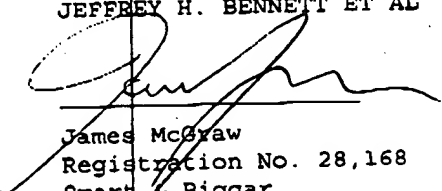
In contrast, claim 1 of this application as now amended recites that each of the plurality of transmission line sections comprises "at least two oppositely poled diodes connected in parallel ... to limit voltage of said signal at said output of the respective transmission line section". Claim 18 as now amended similarly recites "at least two oppositely-poled diodes coupled in parallel between the two output connections to limit voltage of said signal between said output connections", and claim 24 as now amended likewise recites "two oppositely-poled parallel-connected shunt diode arrays coupled at the output of the transmission line section to limit voltage of said signal at said output". These arrangements and functions are not provided by Calviello for a plurality of sections as recited in these claims, and specifically not for the second section of Calviello as discussed above.

Accordingly, the claims as now amended patentably distinguish the invention from Calviello and are believed to be properly allowable.

Reconsideration, and consequent allowance, of this application as now amended is therefore courteously requested.

Respectfully submitted,

JEFFREY H. BENNETT ET AL



James McGraw
Registration No. 28,168
Smart & Biggar

Dated: July 29, 2003
JMC/RJH/wfs
Smart & Biggar
Ottawa, Canada.
Tel: (613) 232-2486 ext. 310

MARKED-UP VERSION OF CLAIMS TO SHOW CHANGES MADE

1. (Amended) A power limiter comprising input terminals and a transmission line arranged to couple a high frequency signal supplied to the input terminals to an output of the power limiter, the transmission line comprising a plurality of successive transmission line sections, each transmission line section comprising at least a series inductance and a shunt capacitance, the shunt capacitance comprising a capacitance of at least [one diode] two oppositely poled diodes connected in parallel to an output of the respective transmission line section to limit voltage of said signal at said output of the respective transmission line section, wherein at least two of the transmission line sections have different numbers, decreasing from said input terminals towards said output of the power limiter, of diodes connected in series with one another and constituting each of said at least two oppositely poled diodes of the respective transmission line sections.

18. (Amended) A high frequency signal power limiter comprising a plurality of transmission line sections connected in succession, each transmission line section comprising:

two input connections;

two output connections;

at least one inductance coupling the two input connections to the two output connections; and

at least two oppositely-poled diodes coupled in parallel between the two output connections to limit voltage of said signal between said output connections;

wherein each of said at least two oppositely poled diodes

of at least each of the successive transmission line sections except a last one of the successive transmission line sections comprises a plurality of diodes connected in series, a number of said plurality of diodes connected in series decreasing for the successive transmission line sections towards said last one of the successive transmission line sections, whereby the successive transmission line sections limit said signal to successively decreasing voltages.

24. (Amended) A limiter for limiting a high frequency signal, comprising a plurality of transmission line sections connected in succession, each transmission line section comprising at least one series inductance coupling an input to an output of the transmission line section, and [at least one] two oppositely-poled parallel-connected shunt diode arrays coupled at the output of the transmission line section to limit voltage of said signal at said output;

wherein the diode arrays comprise different numbers of diodes, connected in series, with the number of series diodes of the arrays decreasing progressively for the plurality of transmission line sections from an input of the limiter to an output of the limiter.